Technical Assistance

Contact your FHWA or FTA Federal Field Office about:

Regional Architecture Process Workshop: A two-day workshop to prepare key players and champions for the process of developing a regional architecture. The workshop is based on the **Regional ITS Architecture Guidance Document**, available on the ITS Document Library, #13598, at www.its.dot.gov.

Direct Technical Assistance provided by FHWA and FTA field staff, US DOT consultants.

Peer Assistance through the Peer-to-Peer Program for assistance related to architecture development at www.its.dot.gov/peer/peer.html.

On-line and Classroom Training

Visit the ITS Professional Capacity Building Program web site for more detailed information on all ITS training and education at: www.pcb.its.dot.gov. The following training is presented as both classroom and on-line courses to help you get started immediately:

ITS Architecture Standards and Conformity: FHWA Rule and FTA Policy: A ½-day, briefing session for State and local officials available through FHWA and FTA Field offices.

Introduction to the National ITS Architecture: An 8-hour web-based course that provides a broad overview of the National ITS Architecture and its role in planning, designing and implementing ITS. Available through the Consortium for ITS Training and Education at: www.citeconsortium.org. **Free through 9/30/2002**.

Introduction to Systems Engineering: An overview of systems engineering, introducing basic concepts and technical practices, such as modeling, prototyping, trade-off analysis and testing, management practices, risk assessment and mitigation, and "best practices." Available through the National Highway Institute (NHI) at: www.nhi.fhwa.dot.gov.

Using the National ITS Architecture for Deployment: A 2-day, classroom course introducing the concepts, terms, and tools of the National Architecture. Available through NHI at: www.nhi.fhwa.dot.gov.

Complying with the FTA's Policy on ITS Architecture Consistency and its Impact on Project Planning and Implementation: A one-day course that provides transportation agencies with an understanding of the Policy, the impact of transit ITS planning and development, and practical benefits and guidelines of conformance. Available through the National Transit Institute at: www.ntionline.com.

Turbo Architecture Software Training: A one-day classroom course on the Turbo Architecture tool, an interactive software training program to assist transportation professionals in developing regional and project architectures with the National ITS Architecture as a starting point. Available through NHI at: www.nhi.fhwa.dot.gov.

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FHWA Rule
FTA Policy

National ITS Architecture and Standards Conformance

Summary of Architecture Conformance Requirements

The 1998 Transportation Equity Act for the 21st Century (TEA-21), section 5206(e), requires ITS projects funded from the Highway Trust Fund to conform with the National ITS Architecture and appropriate standards. In April 2001, the Federal Highway Administration (FHWA) issued a rule and the Federal Transit Administration (FTA) an equivalent policy requiring state and local transportation agencies to:

- **Develop a regional ITS architecture, using the National ITS Architecture as a resource.**
- **Use a systems engineering approach for ITS projects.**

Architecture Requirements:

The critical dates for completion of a regional ITS architecture are:

- By **April 8, 2005,** if a region has an on-going ITS project on April 8, 2001.
- Or **within four years** of the final design of a region's **first** ITS project.

Modifications to existing systems, in order to conform with the National ITS Architecture, are not required by the Rule/Policy. It is anticipated over time, however, that regional ITS architectures would call for changes to legacy systems in order to support local desires for integration.

Project Requirements:

- Until a regional ITS architecture is in place, all major ITS projects must have a project level architecture to ensure proper consideration of regional integration.
- All ITS projects must be developed using a systems engineering approach. This requires project developers to consider all phases of the system's life cycle from system conception to installation. The stages of planning, design, procurement, deployment, operations, maintenance, expansion, and retirement of the system or subsystems must be considered.
- Once a regional ITS architecture is in place, all subsequent ITS projects must be designed in accordance with it.

Architecture = Framework

The National ITS Architecture defines a common framework to promote interoperability and efficiency. The architecture defines:

- The functions that are required for ITS (e.g., gather traffic information or request a route).
- The physical entities or subsystems where these functions reside (e.g., the roadside or the vehicle).
- The information flows and data flows that connect these functions and physical subsystems together into an integrated system.

A regional architecture should be developed to the scale appropriate for local needs. It defines:

- ☑ The geographical area being addressed.
- ☑ The key institutional players and their roles.
- ☑ Required agreements between institutional players.
- ☑ Functional requirements.
- ☑ Interface requirements.
- ☑ Standards to be applied.
- ☑ The project implementation sequence.

Interoperability *is the ability of systems to provide services to, and accept services from, other systems and to use the services to operate effectively together.*

The regional ITS architecture acts as the framework for individual ITS projects. The regional architecture is also consistent with ITS strategies and projects in applicable transportation plans.

Until the regional architecture is in place, major ITS projects require a project-level architecture that is forward-looking and responds to regional integration issues. Once a regional architecture is in place, all subsequent ITS projects must be in accordance with the regional architecture.

Systems Engineering = Process

Systems engineering *is an interdisciplinary collaborative approach to derive, evolve, and verify a life cycle balanced system solution that satisfies customer expectations and meets public acceptability.*

Systems engineering is a process. Upfront, it addresses the lifecycle of a project or deployment — focusing on planning, design, deployment, procurement, operations, maintenance, expansion, and retirement. The systems engineering approach ensures that the current and future needs of local ITS implementations are met. The systems engineering analysis should be on a scale commensurate with the project scope.

Systems engineering is iterative. The process is applied to every level of the system – from high-level regional analysis, through individual ITS projects or project bundles, to individual systems within projects – and is applied repeatedly over time as the system evolves.

Minimum Systems Engineering Process Elements:

- *Identification of applicable regional architecture portions.*
- *Identification of agencies and roles.*
- *Requirements analysis and specification.*
- *Identification of relevant ITS standards, test procedures.*
- *Alternatives analysis to meet requirements.*
- *Procurement options.*
- *System operations and management procedures and resources.*

Getting Help Developing and Implementing Regional Architectures

FHWA and FTA have developed a series of training courses and technical assistance opportunities to help you apply the new Rule/Policy. Page 4 presents a listing of options.

Contact:	*Visit Us:*	Toll Free ITS Help Line:	Headquarters Resources
The ITS Specialist at your FHWA Division Office or your FTA Regional Office: www.its.dot.gov/jpostaff/itssp.htm	The ITS Architecture Program for conformity information at: www.its.dot.gov/aconform/aconform.htm	1-866-367-7487	Pam Kordenbrock (FHWA) 202-366-2199 Pamela.kordenbrock@fhwa.dot.gov Ron Boenau (FTA) 202-366-0195 Ronald.boenau@fta.dot.gov